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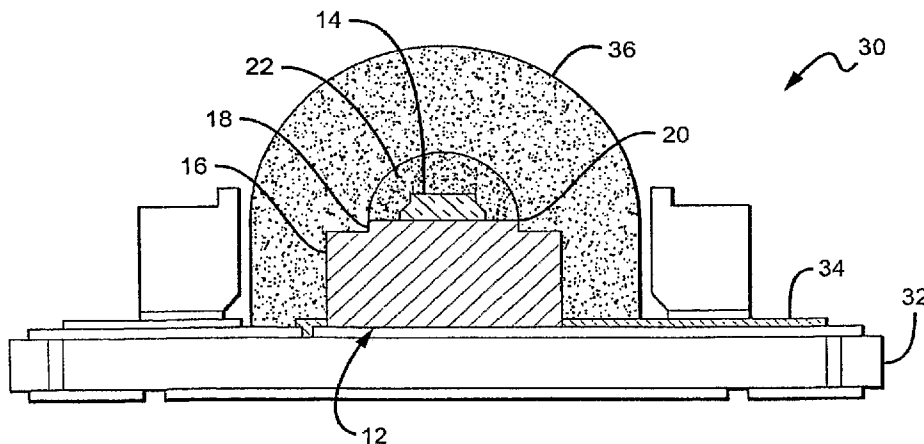
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[Continued on next page]

(54) Title: UNIFORM EMISSION LED PACKAGE



(57) Abstract: An emitter package (10, 30) comprising a light emitting diode LED (14) mounted to the surface of a submount (12) with the surface having a first meniscus forming feature (20) around the LED (14). A matrix encapsulant (22) is included on the surface and covering the LED (14). The outer edge of the matrix encapsulant (22) adjacent the surface is defined by the meniscus forming feature (20) and the encapsulant (22) forms a substantially dome-shaped covering over said LED (14). A method for manufacturing an LED package (10, 30) by providing a body (12) with a surface having a first meniscus holding feature (20). An LED (14) is mounted to the surface with the meniscus holding feature (20) around the LED (14). A liquid matrix encapsulant (22) is introduced over the LED (14) and the surface, the first meniscus holding feature (20) holding the liquid matrix encapsulant (22) in a dome-shape over the LED (14). The matrix encapsulant (22) is then cured.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER INV. H01L33/00		
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B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) H01L		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
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C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2005 298817 A (SHOWA DENKO KK) 27 October 2005 (2005-10-27) abstract figure 3	1-18,21, 22,24-35
X	EP 1 059 678 A (SANYO ELECTRIC CO [JP]) 13 December 2000 (2000-12-13) column 6, line 55 - column 7, line 54 figure 5	1-7,18, 21,22, 26-28,30
<div style="display: flex; justify-content: space-between;"> <input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex. </div>		
* Special categories of cited documents :		
A document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family	
Date of the actual completion of the international search <p style="text-align: center; font-weight: bold;">8 August 2007</p>	Date of mailing of the international search report <p style="text-align: center; font-weight: bold;">31/10/2007</p>	
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer <p style="text-align: center; font-weight: bold;">Sauerer, Christof</p>	

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International application No
PCT/US2007/007600

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>JP 2006 054209 A (TOYODA GOSEI KK) 23 February 2006 (2006-02-23)</p> <p>abstract paragraphs [0033] - [0047] paragraph [0072] figure 3</p>	<p>1-3, 9-11,13, 18,21, 22,24, 26-29, 32,33,35</p>
X	<p>US 5 959 316 A (LOWERY CHRISTOPHER HAYDN [US]) 28 September 1999 (1999-09-28) cited in the application</p> <p>figure 4 column 3, line 18 - line 39</p>	<p>1-3, 9-11,13, 18,21, 22,24, 26-29, 32,33,35</p>
P,X	<p>WO 2007/018560 A (CREE INC [US]; ANDREWS PETER [US]) 15 February 2007 (2007-02-15)</p> <p>the whole document</p>	<p>1-7, 9-13,18, 21,22, 24,26-35</p>
A	<p>JP 2000 002802 A (DAINIPPON PRINTING CO LTD) 7 January 2000 (2000-01-07) the whole document</p>	<p>1-18,21, 22,24-35</p>
A	<p>US 2004/106324 A1 (KANEKO TSUYOSHI [JP]) 3 June 2004 (2004-06-03) figures 29-31B page 10, paragraph 189 - page 11, paragraph 207</p>	<p>1-18,21, 22,24-35</p>
A	<p>WO 2005/101909 A (CREE INC [US]; NEGLEY GERALD H [US]; TARSA ERIC [US]) 27 October 2005 (2005-10-27) page 7, line 16 - page 12, line 14 figures 2A-3D</p>	<p>1-18,21, 22,24-35</p>

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2007/007600

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-18, 21, 22, 24-35

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-18, 21, 22, 24-35

An emitter package, comprising:
a solid state emitter mounted to a surface of a body, said surface having a first meniscus forming feature around said solid state emitter; and
an encapsulant on said surface and covering said solid state emitter, said encapsulant forming a dome-shape over said solid state emitter, the size and shape of said encapsulant at least partially defined by said meniscus forming feature.

2. claims: 19, 20, 23, 36-39

An emitter package, comprising:
a solid state emitter having a first meniscus forming feature; and
an encapsulant on a surface of said solid state emitter and at least partially covering said surface, said first meniscus forming feature forming said encapsulant in a substantially dome-shape on said surface.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2007/007600

Patent document cited in search report	A	Publication date	Patent family member(s)	Publication date
JP 2005298817	A	27-10-2005	NONE	
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